Canadian Journal of Physics

Author Index
Volume 87, 2009

Revue canadienne de physique

Index des auteurs
Volume 87, 2009

Abheera, H., 843
Aboelkassem, Y., 685
Abourabia, A.M., 675
Adam, A.G., 557
Afshin, H., 125
Agarwal, S.K., 175
Al-Badawi, A., 349
Ali, N., 1047
Amlouk, M., 653
Antimirova, T., 1269
Aouachria, M., 389
Arazi, A., 1025
Attaourti, Y., 299
Avramidi, I.G., 1089
Aymar, M., 543
Ayub, M., 1139
Aziz, Z., 981
Bailleux, S., 425
Bailly, G., 735
Bains, A.S., 861
Bao, C.G., 353, 967
Barnaby, N., 189
Bartlett, S.D., 219
Bary, A.A., 867
Basu, D., 721
Battesti, R., 735
Beck, D.R., 75
Beiersdorfer, P., 9
Benner, D.C., 499, 517
Bentata, S., 981
Bernard, A., 537
Besbes, A., 981
Besli, N., 293
Bhattacharya, A., 135
Bhattacharya, D.P., 1203
Bhattacharyya, S., 135
Bielsa, F., 735
Biémont, É. 1275
Biswas, S.K., 135
Blais, A., 225
Blundell, S.A., 55
Boshra, A., 647
Bouanich, J.-P., 485
Boubaker, K., 653
Bouchard, V., 279
Bourassa, A.E., 1133
Brannlund, J., 241
Brauer, C.S., 449
Brits, L., 271
Brooks, R.L., 575
Brown, L.R., 469, 517
Bruna, P.J., 589
Buchmann, A.J., 773
Cardoso, T.R., 857, 1185
Carrington, T. Jr., 417
Carter, J.D., 633
Castro, L.B., 857, 1185
Cesar, C.L., 791, 799
Chantler, C.T., 763
Chen, C.L., 117
Chen, S., 1181
Chen, X.-R., 153
Chen, Z., 117
Cherry, O., 633
Chetouani, L., 389, 399
Chevrier, V.L., 625
Chine, N., 399
Choueib, M., 1163
Chung, T., 219
Clar, M., 1275
Coley, A., 241
Cooke, S.A., 567
Copsey, K., 285
Cova, R.J., 619
Crawford, T.J., 469
Crivelli, P., 799
Cui, H.-L., 153
Dahn, J.R., 625
Damseh, R.A., 161
Das, S., 233
Dasgupta, K., 267
de Castro, A.S., 857, 1185
de Haan, V., 999, 1073
de Rham, C., 201
De, B., 135
Deb, A., 311
DeBenedictis, A., 255
Degenstein, D.A., 925, 1133
Deiglmayr, J., 543
deLaat, R.H., 575
Derevianko, A., 67
Deshmukh, P.C., 49
Devi, V.M., 499, 517
Dick, R., 407, 909
Dixit, A., 175
Djelti, R., 981
Djeradi, A., 111
Doherty, A.C., 219
Domeier, E., 75
Downie, L., 557
Drouin, B.J., 449
Duan, Z., 437
Dulieu, O., 543
Dutta, S., 311
Duwairi, H.M., 161
Dzuba, V.A., 15, 25
Edery, A., 251
El Bary, A.A., 329
El-Aziz, M.A., 359
El-Bary, A.A., 1213
El-Deberky, M.A.A., 703
El-Din, M.S.M.N., 945
Elhandi, S., 299
El-Karamany, A.S., 867
Elkork, N., 1079
Emam, T.G., 1159
Emek, M., 293
Endres, C.P., 425
Enzonga, S.Y., 1275
Evans, W.F.J., 925
Ez-Zahraouy, H., 105
Ezzat, M.A., 329, 867, 1213
Fabbri, L., 251
Fakhfakh, Z., 973
Falek, L., 111
Fan, H.-Y., 1233
Fang, X.-Z., 1021
Feizabadi, M.S., 691
Felfli, Z., 321
Field, R.W., 437
Firouzjahi, H., 267
Firrozabadi, B., 125
Fivet, V., 1275
Flambaum, V.V., 15, 25
Fleming, S.W., 1127
Fouché, M., 735
Fridjine, S., 653
Friesen, H., 607
Fu, H., 169
Fucci, G., 1089
Gamache, R.R., 517
Gambetta, J.M., 225
Gao, T., 169
Garfinkle, D., 615
Garnir, H.-P., 1275
Gattinger, R.L., 925, 1133
Geppert, Ch., 825
Gerginov, V., 101
Gerry, M.C.L., 567
Ghaffary, T., 1151
Ghorbel, N., 973
Ghosh, D., 311
Giesen, T.F., 425
Gill, T.S., 861
Gouba, L., 995
Granger, A.D., 557
Grein, F., 589
Guo, G., 989
Guo, J.-Y., 1021
Gupta, G.P., 895
Gupta, R.R., 179
Guptaroy, P., 135
Gwyn, R., 267
Hachicha, O., 973
Hamade, Y., 1163
Hao, L.M., 117
Hao, X., 1181
Haouat, S., 399

© 2009 NRC Canada

Hayano, R.S., 835
Hayat, T., 1047
He, Y.Z., 353, 967
Hedendahl, D., 817
Hervik, S., 241
Hirose, A., 407
Houalla, D., 1079
Howarth, D.F., 709
Hurtmans, D.R., 485
Hutchison, C.L., 225
Ismaili, A.A., 105
Janečkovà, R., 425
Jena, S.N., 1171
Jentschura, U.D., 757
Ji, G.-F., 153
Johnson, W.R., 101
Jose, J., 49
Joshi, S.C., 1059
Joshi, Y.N., 1255
Kadota, K., 195
Kajita, M., 743
Kallel, A., 973
Kamani, D., 695
Karczmarek, J.L., 263
Kawano, T., 195
Kellett, I., 607
Kendoush, A.A., 1095
Kengne, E., 1191
Khedr, G.M., 675
Kimpton, J.A., 763
Korek, M., 1079
Krämer, J., 825
Krieger, J., 825
Krumrey, C., 567
Kumar, Rajneesh, 179, 377
Kumar, Rajeev, 377
Kumar, S., 659
Kwela, J., 851
Lambo, R., 799
Lenz Cesar, C., 791
Li, H.-M., 1233
Li, M., 583
Lind, C., 607
Lindgren, I., 817
Linton, C., 557
Liu, D., 729
Liu, W., 169, 1009
Liu, X., 1009, 1181
Llewellyn, E.J., 925, 1133
Lloyd, N.D., 1133
Long, C., 989
Luc-Koenig, E., 67
Luo, F., 153
Madarassy, E.J.M., 1013
Mahajan, A., 659
Mahajan, S., 659
Mahmoud, M.A.A., 675, 1065
Manaut, B., 299
Mann, R.B., 285
Manson, S.T., 5, 49
Margulès, L., 425
Martin, J.C., 337
Martin, J.D.D., 633
Marushka, V.I., 639
Masnou-Seeuws, F., 67
Mathieu, P., 205
Mauchain, J., 735
McDade, I.C., 925, 1133
McKellar, A.R.W., 411, 417, 517
Megahed, A.M., 1065
Meng, Q.-T., 1247
Merer, A.J., 437
Meusburger, C., 245
Mhirech, A., 105
Midday, S., 1203
Miller, C.E., 499, 517
Milner-Bolotin, M., 917, 1269
Mohr, P.J., 757
Moll, R.F., 917
Monteil, Y., 1163
Msezane, A.Z., 321, 895
Mukherjee, S., 1037
Muni, M.K., 1171
Naeem, A., 1139
Narayanan, A., 843
Nardone, M., 735
Nawaz, R., 1139
Negri, A.E., 1025
Noack, A., 1269
Noble, G.A., 807
Nörtershäuser, W., 825
Novotny, C., 749
O'Brien, J.J., 583
O'Brien, L.C., 583
O'Connell, R.F., 45
Oberlack, M., 1047
Orozco, L.A., 95
Paranjape, M.B., 251
Pattnaik, H.R., 1171
Pearson, J.C., 449
Pérez Galván, A., 95
Perrin, A., 425
Pinto Da Souza, B., 735
Pirali, O., 601
Pradhan, G.B., 49
Predoi-Cross, A., 485, 517
Preethi, T.M., 843
Qin, S., 989
Quinet, P., 1275
Radojevic, V., 49
Ramachandran, H., 843
Rizzini, E.L., 785
Rizzo, C., 735
Robilliard, C., 735
Rohart, F., 485
Rojo, A.G., 615
Ross, A.J., 537
Rozali, M., 271
Russell, D.K., 567
Saad, A.M., 369
Safronova, A.S., 83
Safronova, U.I., 83
Saini, N.S., 861
Sakalli, I., 349
Salomonson, S., 817
Sánchez, R., 825
Sau, G., 135
Savukov, I., 35
Schlemmer, S., 425
Schmidt, J.R., 1099
Scholtz, F.G., 995
Scott, P.J., 933
Seif, A., 647
Sepehri, A., 1151
Sfarti, A., 969
Shafranyosh, I.I., 639
Shaji, S., 583
Sharif, M., 879
Sharma, A., 843
Shegelski, M.R.A., 607
Sheikh, U., 879
Sheikhi, J., 125
Sheng, D., 95
Singh, N.L., 1037
Smith, R.W., 933
Sobh, A.M., 957
Sodha, M.S., 175
Sokolovski, D., 321
Solite, M.E., 945
Song, A., 583
Steinitz, M., 601, 1255
Stewart, A.M., 151
Suneeta, V., 213
Sung, K., 469
Teffahi, H., 111
Taher, F., 1163
Taj, S., 299
Tan, J.N., 757
Tang, J., 417
Tanner, C.E., 101
Tauheed, A., 1255
Tiedemann, D., 825
Tokaryk, D.W., 443, 557, 601
Toth, R.A., 469, 517
Träbert, E., 1275
Udayashankar, N.K., 345
Updahya, M.K., 345
Vagenas, E.C., 233
Vaillancourt, R., 1191
van der Ende, B.M., 575
van Wijngaarden, J., 443
van Wijngaarden, W.A., 807
Venkataraman, M., 499
Venturelli, L., 785
Vervloet, M., 601
Wang, X.-G., 417
Wang, Y., 1047
Watson, J.K.G., 437
Wazwaz, A.-M., 1227
Weber, T.A., 41
Weil, J.A., 709
Werbowy, S., 851
Westwood, N.P.C., 575
Wilhelm, F.K., 225
Wilkerson, T.D., 1
Winslade, C., 575
Wunderle, K.E., 909
Wundt, B.J., 757
Xu, J.-B., 1031
Xu, L.-H., 449
Xu, Y., 1247
Yamaguchi, M., 195
Yang, S., 1181
Yang, Z., 989
Yildirim, A., 293
Yilmaz, S., 293
Yuan, H.-C., 1233
Žáková, M., 825

© 2009 NRC Canada

Zhang, J.-S., 1031
Zhao, J., 1247
Zhao, Y., 95
Zomorrodian, M.E., 1151
Zurlo, N., 785
Zwanziger, J.W., 625

© 2009 NRC Canada

Canadian Journal of Physics

Subject Classification
Volume 87, 2009

Revue canadienne de physique

Classification thématique
Volume 87, 2009

Summary of the Physics and Astronomy Classification Scheme (PACS)®, as developed by the American Institute of Physics and used with its permission by the *Canadian Journal of Physics*. For a more detailed listing, see http://publish.aps.org/PACS/.

Sommaire du plan de classification PACS® (Physics and Astronomy Classification Scheme) élaboré par le American Institute of Physics et utilisé avec sa permission par la *Revue canadienne de physique*. Pour plus de détails, rendez-vous au site http://publish.aps.org/PACS/.

00.00 SUMMARY OF PACS SCHEME

01.00 Communication, education, history, and philosophy
02.00 Mathematical methods in physics
03.00 Quantum mechanics, field theories, and special relativity (see also section 11 General theory of fields and particles)
04.00 General relativity and gravitation (see also 95.30.Sf in astronomy). Special relativity, see 03.30.+p
05.00 Statistical physics, thermodynamics, and nonlinear dynamical systems (see also 02.50.–r Probability theory, stochastic processes, and statistics)
06.00 Metrology, measurements, and laboratory procedures (for laser applications in metrology, see 42.62.Eh)
07.00 Instruments, apparatus, and components common to several branches of physics and astronomy

10.00 THE PHYSICS OF ELEMENTARY PARTICLES AND FIELDS

11.00 General theory of fields and particles
12.00 Specific theories and interaction models; particle systematics
13.00 Specific reactions and phenomenology
14.00 Properties of specific particles

20.00 NUCLEAR PHYSICS

21.00 Nuclear structure
23.00 Radioactive decay and in-beam spectroscopy
24.00 Nuclear reactions: general
25.00 Nuclear reactions: specific reactions
26.00 Nuclear astrophysics
27.00 Properties of specific nuclei listed by mass ranges
28.00 Nuclear engineering and nuclear power studies
29.00 Experimental methods and instrumentation for elementary-particle and nuclear physics

30.00 ATOMIC AND MOLECULAR PHYSICS

31.00 Electronic structure of atoms and molecules: theory
32.00 Atomic properties and interactions with photons
33.00 Molecular properties and interactions with photons
34.00 Atomic and molecular collision processes and interactions
36.00 Exotic atoms and molecules; macromolecules; clusters
39.00 Instrumentation and techniques for atomic and molecular physics

40.00 ELECTROMAGNETISM, OPTICS, ACOUSTICS, HEAT TRANSFER, CLASSICAL MECHANICS, AND FLUID MECHANICS

41.00 Electromagnetism; electron and ion optics
42.00 Optics
43.00 Acoustics

44.00 Heat transfer
45.00 Classical mechanics of discrete systems
46.00 Continuum mechanics of solids (see also 83.10.Ff in rheology)
47.00 Fluid dynamics

50.00 PHYSICS OF GASES, PLASMAS, AND ELECTRIC DISCHARGES

51.00 Physics of gases
52.00 Physics of plasmas and electric discharges

60.00 CONDENSED MATTER: STRUCTURAL, MECHANICAL AND THERMAL PROPERTIES

61.00 Structure of solids and liquids; crystallography
62.00 Mechanical and acoustical properties of condensed matter
63.00 Lattice dynamics
64.00 Equations of state, phase equilibria, and phase transitions
65.00 Thermal properties of condensed matter
66.00 Transport properties of condensed matter (nonelectronic)
67.00 Quantum fluids and solids; liquid and solid helium
68.00 Surfaces and interfaces; thin films and low-dimensional systems (structure and nonelectronic properties)

70.00 CONDENSED MATTER: ELECTRONIC STRUCTURE, ELECTRICAL, MAGNETIC, AND OPTICAL PROPERTIES

71.00 Electronic structure of bulk materials
72.00 Electronic transport in condensed matter
73.00 Electronic structure and electrical properties of surfaces, interfaces, thin films, and low-dimensional structures
74.00 Superconductivity
75.00 Magnetic properties and materials
76.00 Magnetic resonances and relaxations in condensed matter, Mössbauer effect
77.00 Dielectrics, piezoelectrics, and ferroelectrics and their properties
78.00 Optical properties, condensed-matter spectroscopy and other interactions of radiation and particles with condensed matter
79.00 Electron and ion emission by liquids and solids; impact phenomena

80.00 INTERDISCIPLINARY PHYSICS AND RELATED AREAS OF SCIENCE AND TECHNOLOGY

81.00 Materials science
82.00 Physical chemistry and chemical physics
83.00 Rheology
84.00 Electronics; radiowave and microwave technology; direct energy conversion and storage
85.00 Electronic and magnetic devices; microelectronics
87.00 Biological and medical physics
89.00 Other areas of applied and interdisciplinary physics

90.00 GEOPHYSICS, ASTRONOMY, AND ASTROPHYSICS

91.00 Solid Earth physics
92.00 Hydrospheric and atmospheric geophysics
93.00 Geophysical observations, instrumentation, and techniques
94.00 Aeronomy and magnetospheric physics
95.00 Fundamental astronomy and astrophysics; instrumentation, techniques, and astronomical observations
96.00 Solar System
97.00 Stars
98.00 Stellar systems; interstellar medium; galactic and extragalactic objects and systems; the Universe

Canadian Journal of Physics

Contents
Volume 87, 2009

Revue canadienne de physique

Sommaire
Volume 87, 2009

January / janvier

Symposium on atomic physics: A tribute to Walter Johnson

HISTORY / HISTOIRE

T.D. Wilkerson Walter R. Johnson: Personal recollections and his early work 1

REVIEW / SYNTHÈSE

Steven T. Manson Relativistic-random-phase approximation calculations of atomic photoionization: what we have learned 5

Peter Beiersdorfer Precision energy-level measurements and QED of highly charged ions 9

V.A. Dzuba and V.V. Flambaum Atomic calculations and search for variation of the fine-structure constant in quasar absorption spectra 15

V.V. Flambaum and V.A. Dzuba Search for variation of the fundamental constants in atomic, molecular, and nuclear spectra 25

I. Savukov Diverse, successful, and fascinating relativistic many-body perturbation theory 35

Thomas Weber Relativity in rotating frames: Riddles and enigmas 41

R.F. O'Connell Stochastic methods in atomic systems and QED 45

Vojislav Radojević, Jobin Jose, Gagan Bihari Pradhan, Pranawa C. Deshmukh, and Steven T. Manson Relaxation effects in the photodetachment of intermediate p shells of chlorine and bromine negative ions 49

ARTICLE / ARTICLE

Steven A. Blundell Calculation of QED corrections in highly charged Zn-like ions 55

A. Derevianko, E. Luc-Koenig, and F. Masnou-Seeuws Application of B-splines in determining the eigenspectrum of diatomic molecules: robust numerical description of halo-state and Feshbach molecules 67

Donald R. Beck and Eric Domeier Improved RCI techniques for treating $4f^n$ atoms and ions: Application to Gd IV energies 75

U.I. Safronova and A.S. Safronova Relativistic many-body calculations of excitation energies and transition rates from core-excited states in silverlike ions 83

A. Pérez Galván, D. Sheng, L.A. Orozco, and Y. Zhao Two-color modulation transfer spectroscopy 95

Vladislav Gerginov, Carol E. Tanner, and W.R. Johnson Observation of the nuclear magnetic octupole moment of ^{87}Rb from spectroscopic measurements of hyperfine intervals 101

February / février

ARTICLE / ARTICLE

Abdelaziz Mhirech, Assia Alaoui Ismaili, and Hamid Ez-Zahraouy The effect of on-ramp and off-ramp on the one dimensional road with open boundaries 105

L. Falek, H. Teffahi et A. Djeradi Simulation d'un modèle de la source vocale et détermination des paramètres de commande 111

Zhi Chen, Chang Le Chen, and Li Mei Hao Numerical simulation of facet dendritic growth in a forced flow 117

B. Firoozabadi, H. Afshin, and J. Sheikhi Experimental investigation of single value variables of three-dimensional density current 125

Goutam Sau, S.K. Biswas, Bhaskar De, P. Guptaroy, A. Bhattacharya, and S. Bhattacharyya Physics of particle collisions at high energies: limits to phenomenology, Part 3 135

A.M. Stewart Angular momentum of the physical electron 151

© 2009 NRC Canada

Hong–Ling Cui, Fen Luo, Xiang–Rong Chen, and Guang–Fu Ji First–principle calculations of the structure and elastic properties of GaAs under pressure 153

H.M. Duwairi and Rebhi A. Damseh Thermophoresis particle deposition — thermal radiation interaction on mixed convection from vertical surfaces embedded in porous medium 161

Hongzhi Fu, WenFang Liu, and Tao Gao High–pressure phase transition and thermodynamic properties of MgSe: Ab initio study 169

Mahendra Singh Sodha, Amrit Dixit, and Sujeet Kumar Agarwal Electric field emission of electrons from spherical metallic dust particles 175

NOTE / NOTE

Rajneesh Kumar and Raj Rani Gupta Deformation due to various sources in a fibre–reinforced anisotropic generalized thermoelastic medium 179

March / mars

REVIEW / SYNTHÈSE

Neil Barnaby Nonlocal inflation 189

Masahide Yamaguchi, Kenji Kadota, and Teruhiko Kawano D-term chaotic inflation in supergravity and leptogenesis 195

Claudia de Rham Cascading gravity and degravitation 201

P. Mathieu Quasi-particles in conformal field theory 205

V. Suneeta A proposal for studying off-shell stability of vacuum geometries in string theory 213

ARTICLES / ARTICLES

Thomas Chung, Stephen D. Bartlett, and Andrew C. Doherty Characterizing measurement-based quantum gates in quantum many-body systems using correlation functions 219

Chantal L. Hutchison, J.M. Gambetta, Alexandre Blais, and F.K. Wilhelm Quantum trajectory equation for multiple qubits in circuit QED: Generating entanglement by measurement 225

Saurya Das and Elias C. Vagenas Phenomenological implications of the generalized uncertainty principle 233

REVIEW / SYNTHÈSE

J. Brannlund, A. Coley, and S. Hervik Holonomy, decomposability, and relativity 241

C. Meusburger Quantum double and κ-Poincaré symmetries in (2+1)-gravity and Chern–Simons theory 245

Ariel Edery, Luca Fabbri, and M.B. Paranjape Gravitationally coupled magnetic monopole and conformal symmetry breaking 251

A. DeBenedictis On the black hole singularity issue in loop quantum gravity 255

ARTICLES / ARTICLES

Joanna L. Karczmarek Time-dependence and holography in the c=1 matrix model 263

REVIEW / SYNTHÈSE

Keshav Dasgupta, Hassan Firouzjahi, and Rhiannon Gwyn Axions from heterotic string 267

Moshe Rozali and Lionel Brits Holography and fermions at a finite chemical potential 271

Vincent Bouchard Perils and promises of heterotic standard models 279

Keith Copsey and Robert B. Mann Negative energy, instability, and AdS–CFT 285

April / avril

REVIEW / SYNTHÈSE

Mehriban Emek, Nurettin Besli, Ahmet Yildirim, and Suleyman Yilmaz Optical properties of nematic liquid crystal ($C_{21}H_{27}NO_2S$) under AC/DC electric fields 293

ARTICLES / ARTICLES

B. Manaut, Y. Attaourti, S. Taj, and S. Elhandi Mott scattering in strong laser fields revisited 299

S. Haouat, N. Chine, and L. Chetouani Parisi–Wu stochastic quantization for relativistic particles in a weak gravitational plane wave 309

© 2009 NRC Canada

Dipak Ghosh, Argha Deb, and Srimonti Dutta Pionization at AGS and SPS energies – degree of coherence and its target excitation dependence 311

Z. Felfli, A. Z. Msezane, and D. Sokolovski Low-energy electron elastic scattering from complex atoms: Nd, Eu, and Tm 321

Magdy A. Ezzat, Alaa Abd El Bary, and Ahmed S. El Karamany Two-temperature theory in generalized magneto-thermo-viscoelasticity 329

Juan Carlos Martín Analysis of the complex effective permittivity of a heterogeneous sample by the finite-difference time-domain method 337

Mahesha K. Upadhya and N. K. Udayashankar Crystal structure of semiorganic antimony thiourea bromide monohydrate crystals: a redetermination 345

I. Sakalli and A. Al-Badawi Exact solutions to a massive charged scalar field equation in the magnetically charged stringy black-hole geometry and Hawking radiation 349

Y. Z. He and C. G. Bao Periodic giant persistent current in sharp pulses on a ring 353

Mohamed Abd El-Aziz Viscous dissipation effect on mixed convection flow of a micropolar fluid over an exponentially stretching sheet 359

A. M. Saad Raman investigation of hydrogen-implanted and DC hydrogen-plasma-treated Cz Si wafers 369

Rajneesh Kumar and Rajeev Kumar Analysis of wave motion in transversely isotropic elastic material with voids under a inviscid liquid layer 377

M. Aouachria and L. Chetouani Pancharatnam phase for the generalized Jaynes–Cummings model with a nonlinear Kerr cavity 389

RAPID COMMUNICATION / COMMUNICATION RAPIDE

A. Hirose and R. Dick Fresnel's formulae and the Minkowski momentum 407

May / mai

ARTICLES / ARTICLES

A.R.W. McKellar High-resolution infrared spectra of H_2–Ne and D_2–Ne van der Waals complexes 411

Jian Tang, A.R.W. McKellar, Xiao-Gang Wang, and Tucker Carrington Jr. Theoretical and experimental study of infrared spectra of He_2-CO_2 417

L. Margulès, A. Perrin, R. Janekovà, S. Bailleux, C.P. Endres, T.F. Giesen, and S. Schlemmer Rotational transitions within the 2^1, 3^1, 4^1, and 6^1 states of formaldehyde $H_2{}^{12}C^{16}O$ 425

Anthony J. Merer, Zicheng Duan, Robert W. Field, and James K.G. Watson Perturbations in the $4\nu_3$ level of the $\tilde{A}^1A_u$ state of acetylene, C_2H_2 437

D.W. Tokaryk and J.A. van Wijngaarden Fourier transform spectra of the ν_{16}, $2\nu_{16}$, and $2\nu_{16}$–ν_{16} bands of pyrrole taken with synchrotron radiation 443

J.C. Pearson, C.S. Brauer, Brian J. Drouin, and Li-Hong Xu The rotational spectrum of methanol in the third excited torsional state 449

Keeyoon Sung, Linda R. Brown, Robert A. Toth, and Timothy J. Crawford Fourier transform infrared spectroscopy measurements of H_2O-broadened half-widths of CO_2 at 4.3 μm 469

Adriana Predoi-Cross, François Rohart, Jean-Pierre Bouanich, and Daniel R. Hurtmans Xenon-broadened CO line shapes in the fundamental band at 349 K 485

D. Chris Benner, C.E. Miller, and V. Malathy Devi Constrained multispectrum analysis of CO_2–Ar broadening at 6227 and 6348 cm^{-1} 499

A. Predoi-Cross, A.R.W. McKellar, D. Chris Benner, V. Malathy Devi, R.R. Gamache, C.E. Miller, R.A. Toth, and L.R. Brown Temperature dependences for air-broadened Lorentz half-width and pressure shift coefficients in the 30013←00001 and 30012←00001 bands of CO_2 near 1600 nm 517

Alain Bernard and Amanda J. Ross Isotope shifts in the [10.1]4–*X*4 (0–0) and [10.5]3–*X*4 (0–0) transitions of NdO 537

Mireille Aymar, Johannes Deiglmayr, and Olivier Dulieu Systematic trends in electronic properties of alkali hydrides 543

A.G. Adam, A.D. Granger, L.E. Downie, D.W. Tokaryk, and C. Linton Laser spectroscopy of the $A^3\Phi_i$-X^3F_i and $B^3\Phi_4$-$X^3\Phi_4$ transitions of iridium monofluoride (IrF) 557

Christine Krumrey, Stephen A. Cooke, Douglas K. Russell, and Michael C.L. Gerry Fourier transform microwave spectrum of and Born–Oppenheimer breakdown effects in tungsten monoxide, WO 567

B.M. van der Ende, C. Winslade, R.L. Brooks, R.H. deLaat, and N.P.C. Westwood CRDS study of auto-ionizing Rydberg states of argon in a microwave discharge 575

© 2009 NRC Canada

Sadasivan Shaji, Alex Song, Moyang Li, James J. O'Brien, and Leah C. O'Brien Laboratory measurements of the (2,0) $B^2\Delta_{5/2}$-$X^2\Delta_{5/2}$ transition of nickel hydride using intracavity laser absorption spectroscopy 583

Pablo J. Bruna and Friedrich Grein Theoretical study of electric moments, polarizabilities, and fine and hyperfine coupling constants of the $B^3\Pi_g$, $C^3\Pi_u$, $A'^5\Sigma_g^+$, and $C''^5\Pi_u$ states of N_2 589

O. Pirali, D.W. Tokaryk, and M. Vervloet Vibrational dependence of the rotational, spinorbit splitting, and lambda-doubling parameters in the $C''^5\Pi_{ui}$ state of N_2 601

June / juin

TUTORIAL / ARTICLE DIDACTIQUE

Mark R. A. Shegelski, Ian Kellett, Hal Friesen, and Crystal Lind Motion of a circular cylinder on a smooth surface 607

Alberto G. Rojo and David Garfinkle The Parallelometer: a mechanical device to study curvature 615

ARTICLES / ARTICLES

Ramón J. Cova A Bose description of the 1-D para-Bose and para-Fermi oscillators 619

V.L. Chevrier, J.W. Zwanziger, and J.R. Dahn First principles studies of silicon as a negative electrode material for lithium-ion batteries 625

O. Cherry, J. D. Carter, and J. D. D. Martin An atom chip for the manipulation of ultracold atoms 633

I.I. Shafranyosh and V.I. Marushka Diffusion superélastique des électrons sur les états métastables *nsnp* $^3P_{0,2}$ des atomes de magnésium et de strontium 639

Asadollah Boshra and Ahmad Seif A boroxol ring doped zigzag boron nitride nanotube: a computational DFT study of the quadrupole coupling constant 647

S. Fridjine, K. Boubaker, and M. Amlouk Some electron probe X-ray microanalysis (EPMA)- and (BPES)-related physical investigations on ZnSSe thin-films growth composition-related kinetics 653

Sunil and Amit Mahajan A nonlinear stability analysis in a double-diffusive magnetized ferrofluid with magnetic-field-dependent viscosity saturating a porous medium 659

A.M. Abourabia, M.A. Mahmoud, and G.M. Khedr Solutions of nonlinear Schrödinger equation for interfacial waves propagating between two ideal fluids 675

Yasser Aboelkassem Dissipation of intense vortices 685

Mitra Shojania Feizabadi Target finding time for microtubules in a confined geometry 691

Davoud Kamani Supersymmetric form of the string action in the presence of the gauge field 695

M.A.A. El-Deberky Entropy and its squeezing in an intensely driven atomic system 703

J.A. Weil and D.F. Howarth Magnetic resonance spectroscopy of extra-terrestrial methyl radical 709

D. Basu GRB 011211: An alternative interpretation of the optical and X-ray spectra in terms of blueshifts 721

RAPID COMMUNICATION / COMMUNICATION RAPIDE

Daqing Liu On wave functional in QED 729

July / juillet

ARTICLES / ARTICLES

C. Robilliard, B. Pinto Da Souza, F. Bielsa, J. Mauchain, M. Nardone, G. Bailly, M. Fouché, R. Battesti, and C. Rizzo The BMV project: Search for photon oscillations into massive particles 735

Masatoshi Kajita Variance measurement of m_p/m_e using cold molecules 743

C. Novotny, B. Bernhardt, D. Bing, G. Ewald, C. Geppert, G. Gwinner, G. Huber, S. Karpuk, H.-J. Kluge, T. Kühl, W. Nörtershäuser, S. Reinhardt, G. Saathoff, D. Schwalm, T. Stöhlker, and A. Wolf Towards a precision test of time dilation at high velocity 749

Ulrich D. Jentschura, Peter J. Mohr, Joseph N. Tan, and Benedikt J. Wundt Fundamental constants and tests of theory in Rydberg states of hydrogenlike ions 757

C.T. Chantler and J.A. Kimpton Recent developments in X-ray tests of quantum electrodynamics 763

A.J. Buchmann Non-spherical proton shape and hydrogen hyperfine splitting 773

E. Lodi Rizzini, L. Venturelli, and N. Zurlo The mechanisms of antihydrogen formation 785

© 2009 NRC Canada

C.L. Cesar, G.B. Andresen, W. Bertsche, P.D. Bowe, C.C. Bray, E. Butler, S. Chapman, M. Charlton, J. Fajans, M.C. Fujiwara, R. Funakoshi, D.R. Gill, J.S. Hangst, W.N. Hardy, R.S. Hayano, M.E. Hayden, A.J. Humphries, R. Hydomako, M.J. Jenkins, L.V. Jørgensen, L. Kurchaninov, R. Lambo, N. Madsen, P. Nolan, K. Olchanski, A. Olin, R.D. Page, A. Povilus, P. Pusa, F. Robicheaux, E. Sarid, S. Seif El Nasr, D.M. Silveira, J.W. Storey, R.I. Thompson, D.P. van der Werf, J.S. Wurtele, and Y. Yamazaki Antihydrogen Physics at ALPHA/CERN 791

P. Crivelli, C.L. Cesar, and R. Lambo A new trap loading mechanism for hydrogen 799

George A. Noble and William A. van Wijngaarden Critical examination of isotope shift and fine structure measurements for optical transitions in ^{6,7}Li 807

Daniel Hedendahl, Ingvar Lindgren, and Sten Salomonson Towards numerical implementation of the relativistically covariant many-body perturbation theory 817

R. Sánchez, M. Žáková, Ch. Geppert, J. Krämer, A. Krieger, D. Tiedemann, and W. Nörtershäuser Frequency-comb-based measurements of lithium and beryllium isotopes for nuclear structure studies 825

REVIEW / SYNTHÈSE

R.S. Hayano Antiprotonic helium and kaonic helium – A tale of two exotic helium atoms 835

Andal Narayanan, Archana Sharma, T.M. Preethi, H. Abheera, and Hema Ramachandran Higher order nonlinearities in a non-Doppler free geometry 843

S. Werbowy and J. Kwela The E2 admixtures in mixed multipole lines 459.7 and 564.0 nm of Bi I 851

August / août

COMMENT / COMMENTAIRE

T.R. Cardoso, L.B. Castro, and A.S. de Castro Comment on Solutions of the Duffin–Kemmer–Petiau equation for a pseudoscalar potential step in (1+1) dimensions 857

ARTICLES / ARTICLES

Tarsem Singh Gill, Amandeep Singh Bains, and Narsehpal Singh Saini Ion acoustic soliton in weakly relativistic magnetized electron–positron–ion plasma 861

Magdy A. Ezzat, A.S. El-Karamany, and A.A. Bary State space approach to one-dimensional magneto-thermoelasticity under the Green–Naghdi theories 867

M. Sharif and Umber Sheikh Wave properties of isothermal magneto-rotational fluids 879

G.P. Gupta and A.Z. Msezane The mass-number dependence studies for the multiplicity of shower particles produced in interactions of different projectiles with emulsion nuclei at 3.7 GeV/n in the framework of the modified Glauber models I and II 895

K.E. Wunderle and R. Dick Transformation properties and symmetry behaviour of ELKO spinors 909

Rachel F. Moll and Marina Milner-Bolotin The effect of interactive lecture experiments on student academic achievement and attitudes towards physics 917

R.L. Gattinger, W.F.J. Evans, I.C. McDade, D.A. Degenstein, and E.J. Llewellyn Observation of the chemiluminescent $NO + O \rightarrow NO_2 + h\nu$ reaction in the upper mesospheric dark polar regions by OSIRIS on Odin 925

Paul J. Scott and Reginald W. Smith Implementation of a perturbation model for a dilute binary liquid and comparison of model mass diffusion coefficients with microgravity experiment results for liquid Pb 1 wt % Au 933

M.S.M. Nour El-Din and M.E. Solite The mass-number dependence studies for the multiplicity of shower particles produced in interactions of different projectiles with emulsion nuclei at 3.7 GeV/n in the framework of the modified Glauber models I and II 945

Ayman Mahmoud Sobh Slip flow in peristaltic transport of a Carreau fluid in an asymmetric channel 957

ERRATUM / ERRATUM

Y.Z. He and C.G. Bao Erratum: Periodic giant persistent current in sharp pulses on a ring 967

September / septembre

TUTORIAL / ARTICLE DIDACTIQUE

A. Sfarti Generalization of Einstein's synchronization for the case of anisotropic light speed 969

© 2009 NRC Canada

ARTICLES / ARTICLES

O. Hachicha, N. Ghorbel, A. Kallel, and Z. Fakhfakh Temperature effect on dielectric behavior of an industrial porcelain-type ceramic 973

R. Djelti, S. Bentata, Z. Aziz, and A. Besbes Analytical evidence of commuting resonance energy in correlated disorder trimer GaAs-$Al_xGa_{1-x}As$ superlattices 981

Guangjie Guo, Chaoyun Long, Zuhua Yang, and Shuijie Qin DKP oscillator in noncommutative phase space 989

L. Gouba and F.G. Scholtz On the uniqueness of unitary representations of the noncommutative Heisenberg–Weyl algebra 995

Victor de Haan Mach–Zehnder fiber interferometer test of the anisotropy of the speed of light 999

Xianming Liu and Wenbiao Liu Fluctuation on a Schwarzschild black hole 1009

Enikö J.M. Madarassy A method to create disordered vortex arrays in atomic Bose–Einstein condensates 1013

Jian-You Guo and Xiang-Zheng Fang Scattering of a Klein–Gordon particle by a Hulthén potential 1021

Agustín E. Negri and Andrsé Arazi Calculation of charge-state distributions of accelerated ions in gas media 1025

Jian-Song Zhang and Jing-Bo Xu Optimal entanglement generation in cavity QED with dissipation 1031

N.L. Singh and S. Mukherjee Effects of level density in the cross sections of (α, *x*n), (α, p*x*n), (α, 2p*x*n) and (α, α*x*n) reactions in ^{197}Au, ^{181}Ta, ^{nat}In and ^{93}Nb and pre-equilibrium analysis 1037

N. Ali, Y. Wang, T. Hayat, and M. Oberlack Numerical solution of peristaltic transport of an Oldroyd 8-constant fluid in a circular cylindrical tube 1047

October / octobre

RAPID COMMUNICATION / COMMUNICATION RAPIDE

S.C. Joshi Exploration of perturbed dyonic theories 1059

ARTICLES / ARTICLES

Mostafa A.A. Mahmoud and Ahmed M. Megahed MHD flow and heat transfer in a non-Newtonian liquid film over an unsteady stretching sheet with variable fluid properties 1065

Victor de Haan Asymmetric Mach–Zehnder fiber interferometer test of the anisotropy of the speed of light 1073

N. Elkork, D. Houalla, and M. Korek Theoretical calculation of the electronic states with spin–orbit effects of the molecule LiCs 1079

Ivan G. Avramidi and Guglielmo Fucci A model for the pioneer anomaly 1089

Abdullah Abbas Kendoush Effects of the electric field on the virtual mass of a flowing fluid sphere 1095

Jeffrey R. Schmidt Spectrum-generating bialgebra of the hexagonal-lattice dimer model 1099

NOTE / NOTE

Sean W. Fleming Exploring the nature of Pacific climate variability using a "toy" nonlinear stochastic model 1127

R.L. Gattinger, N.D. Lloyd, A.E. Bourassa, D.A. Degenstein, I.C. McDade, and E.J. Llewellyn Observation of the 557.7 nm to 297.2 nm brightness ratio in the auroral spectrum with OSIRIS on Odin 1133

November / novembre

ARTICLES / ARTICLES

M. Ayub, A. Naeem, and R. Nawaz Line-source diffraction by a slit in a moving fluid 1139

Alireza Sepehri, Tooraj Ghaffary, and Mohammad Ebrahim Zomorrodian Measurement of strong coupling constant from transverse momentum 1151

T.G. Emam Effect of temperature on the binding energy of a shallow hydrogenic impurity in a quantum well wire 1159

Y. Hamade, F. Taher, M. Choueib, and Y. Monteil Theoretical electronic investigation of the low-lying electronic states of the LuF molecule 1163

S.N. Jena, M.K. Muni, and H.R. Pattnaik ($q\bar{q}$)-pion mass and decay constant in a relativistic independent-quark model 1171

Shiwu Chen, Xizhun Hao, Xiongwei Liu, and Shuzheng Yang Exact inflationary solution in the chaotic inflation model to non-minimally coupled scalar field 1181

T.R. Cardoso, L.B. Castro, and A.S. de Castro Absence of Klein's paradox for massive bosons coupled by nonminimal vector interactions 1185

© 2009 NRC Canada

E. Kengne and R. Vaillancourt Modulational stability of solitary states in a lossy nonlinear electrical line **1191**

S. Midday and D.P. Bhattacharya Effect of magnetic field on the screening due to hot electrons in the presence of shallow attractive traps **1203**

December / décembre

ARTICLES / ARTICLES

Magdy A. Ezzat and A.A. El-Bary On three models of magneto-hydrodynamic free-convection flow **1213**

Abdul-Majid Wazwaz Multiple-soliton solutions for coupled KdV and coupled KP systems **1227**

Hong-Chun Yuan, Heng-Mei Li, and Hong-Yi Fan Photon-added Bell-type entangled coherent state and some nonclassical properties **1233**

Juan Zhao, Yan Xu, and Qing-Tian Meng Influence of collision energy on the axial polarization of product molecule for reaction F + HO → HF + O **1247**

A. Tauheed, Y.N. Joshi, and M. Steinitz Revised analysis of singly ionized tellurium: Te II **1255**

Émile Biémont, Mathieu Clar, Saturnin Yoca Enzonga, Vanessa Fivet, Pascal Quinet, Elmar Träbert, and Henri-Pierre Garnir Atomic structure calculations and beam-foil observations of La IV **1275**

Author Index / Index des auteurs **AI-1**

Contents for Volume 87 / Sommaire pour volume 87 **C-1**

© 2009 NRC Canada